

sen's proposed polar flight. Much valuable information is available from Jan Mayen Island, Bear Island and Spitsbergen, where Norway has permanent meteorological stations, and observations on other islands have been made by the different expeditions to the Arctic; those taken of the *Fram* expedition (1894-1896) form the most complete series and have been used for this article.

Doctor Hesselberg points out that the maximum wind velocity recorded on the *Fram* during any of the months, May, June and July was 15.5 m/s and that therefore the wind conditions do not constitute more of a hindrance than those in our own latitudes. Over the polar seas temperature rises rapidly during May. In June and July the temperature varies but slightly from the freezing point, and it is only the presence of ice which prevents it from rising still higher. Fog, however, is prevalent in the polar regions in the summer and it is this factor, and neither the cold nor the wind, which makes flying so difficult. The fog lies rather low so that there is no difficulty in flying above it, but a forced landing in a sea of fog might easily have fatal consequences. During the winter when the temperature and wind conditions make flying practically impossible there is little or no

fog, but it makes its appearance in May and increases in frequency until the middle of July. The longest consecutive periods during which the *Fram* was surrounded with fog were 12 hours in May, 46 hours in June and 71 hours in July.

It is therefore very necessary that Amundsen should make his start as early in the year as possible and that the best measures should be taken to insure him as far as possible from running into unfavourable weather conditions which may occur even at the most favourable period of the year. Weather reports from as many stations as possible within the Arctic circle, from the Norwegian stations at Jan Mayen, Bear Island, Spitzbergen and Vardo, from Nome (Alaska) and from certain stations on the Russian and Siberian Arctic coast, will be sent to him. Doctor Hesselberg considers that reliance should not be placed on reports from the *Maud*, as there is some doubt as to the capabilities of her wireless outfit.

In justification of such a flight he points out that the weather conditions in the Polar regions have a great influence over the weather of the rest of the globe. A single flight will not provide information of great value, but it will open the way for a regular service of meteorological observations.

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SOLAR OBSERVATIONS

SOLAR AND SKY RADIATION MEASUREMENTS DURING JUNE, 1924

By HERBERT H. KIMBALL, In Charge, Solar Radiation Investigations

For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January and February, 1924, 53: 42 and 113.

From Table 1 it is seen that solar radiation intensities averaged close to normal values for June at all three stations.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged decidedly below normal at Washington and Madison and close to normal at Lincoln.

Skylight polarization measurements made on three days at Washington give a mean of 38 per cent, with a maximum of 55 per cent on the 26th. Measurements obtained on five days at Madison give a mean of 60 per cent, with a maximum of 71 per cent on the 30th. The values for Washington are below the average June values, and for Madison they are considerably above.

TABLE 1.—*Solar radiation intensities during June, 1924*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	8a.m.	Sun's zenith distance									Noon
		78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	
		Air mass									
e	5.0	4.0	3.0	2.0	11.0	2.0	11.0	.0	3.0	4.0	5.0
June 4.....	mm. cal. cal. cal. cal. cal. I. 17										mm.
6.....	7.29										7.04
10.....	8.50					1.06					8.81
14.....	10.21					0.88	1.06				13.13
21.....	10.59						0.84				8.81
25.....	12.24						1.15	1.37			9.14
27.....	10.21						1.06	1.35			13.13
30.....	13.61					0.77	0.85				10.59
Means.....	8.18					0.95	1.09	1.23	1.40		
Departures.....	(0.86)					0.97	1.07	1.32			
	-0.01	+0.01	-0.02	+0.01							

TABLE 1.—*Solar radiation intensities during June, 1924—Con.
Madison, Wis.*

Date	8a.m.	Sun's zenith distance									Noon
		78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	
		Air mass									
e	5.0	4.0	3.0	2.0	11.0	2.0	11.0	.0	3.0	4.0	5.0
June 4.....	mm. cal. cal. cal. cal. cal. I. 17										mm.
6.....	7.29										7.04
10.....	8.50					1.06					8.81
14.....	10.21					0.88	1.06				13.13
21.....	10.59						0.84				8.81
25.....	12.24						1.15	1.37			9.14
27.....	10.21						1.06	1.35			13.13
30.....	13.61					0.77	0.85				10.59
Means.....	8.18					0.95	1.09	1.23	1.40		
Departures.....	(0.86)					0.97	1.07	1.32			
	-0.01	+0.01	-0.02	+0.01							

Lincoln, Nebr.

June 4.....	9.47	0.77	0.94	1.13	1.38						9.83
10.....	10.21	0.96				1.31	1.05				9.83
13.....	15.11										16.79
19.....	14.10					0.70	0.82				13.13
20.....	13.13							1.16	0.88	0.68	13.61
21.....	12.24					1.04	1.20	1.42			10.59
23.....	13.13					0.78	1.01				16.20
27.....	15.11					0.81					16.23
28.....	13.61							1.08	0.83	0.68	10.97
30.....	9.47					0.85	1.01	1.21	1.42		7.87
Means.....		0.80	0.91	1.07	1.38	1.09	0.82	(0.68)	(0.58)		
Departures.....		+0.05	-0.01	-0.01	+0.03	+0.00	-0.07	-0.06			

¹ Extrapolated.

TABLE 2.—*Solar and sky radiation received on a horizontal surface
[Gram-calories per square centimeter of horizontal surface]*

Week beginning—	Average daily radiation						Average daily departure from normal		
	Washington	Madison	Lincoln	Chicago	New York	Washington	Madison	Lincoln	
May 28.....	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	-22
June 5.....	438	549	503	379	428	-51	+63	-27	
11.....	465	411	515	308	433	-31	-87	+56	
19.....	382	390	611	375	368	-111	-121	+56	
25.....	500	404	586	357	411	+6	-121	+9	
	410	497	564			-80	-38	-22	
						1-1,223	1-6,866	1+1,977	

¹ Excess or deficiency since first of year on July 1.

¹ Extrapolated.